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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,188	09/10/2003	Jeffrey Wayne Eberhard	RD-28,444-2	8797

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GENERAL ELECTRIC COMPANY
GLOBAL RESEARCH
PATENT DOCKET RM. BLDG. K1-4A59
NISKAYUNA, NY 12309

EXAMINER	
HO, ALLEN C	

ART UNIT	PAPER NUMBER
2882	

DATE MAILED: 11/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H:A

Office Action Summary	Application No.	Applicant(s)	
	10/666,188	EBERHARD ET AL.	
	Examiner	Art Unit	
	Allen C. Ho	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *36,37 and 39-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *36,37 and 39-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 July 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 36, 37 and 39-47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 36, 37 and 39-47 recite "...relative to the radiation detector position...". It is unclear whether this recitation means that the geometry of the aperture and the radiation source position are adjusted relative to the radiation detector position; or that the adjustment of the geometry of the aperture, with the radiation source positioned relative to the radiation detector position, so as to limit the incident radiation to a predetermined exposure area at the detector.

Claims 36, 37 and 39-47 recite "an adjustable geometry aperture assembly" and "an aperture". It is unclear what is the structural relationship between these two elements. It is assumed that the adjustable geometry aperture assembly comprises the aperture.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 36, 37 and 39-47 are rejected under 35 U.S.C. 102(b) as being anticipated by Hughes (U. S. Patent No. 5,754,622).

With respect to claim 36, Hughes disclosed a radiation imaging system comprising: a movable radiation source; a radiation detector (**90**); a collimator (**4**) comprising an adjustable geometry aperture assembly (column 4, lines 3-13); a collimator positioning apparatus (**6**, **18**) configured to synchronize an adjustment of the geometry of an aperture with the movement of the radiation source (column 3, lines 54-66) and to coordinate the adjustment of the geometry of the aperture with the radiation source position relative to the radiation detector position so as to limit the incident radiation to a predetermined exposure area (an imaging area) at the detector.

With respect to claim 37, Hughes disclosed the imaging system of claim 36, wherein the aperture assembly is configured for adjusting at least one of the position of the aperture and the shape of the aperture.

With respect to claims 39 and 40, Hughes disclosed the imaging system of claim 36, wherein the aperture assembly comprises a plurality of movable sides (multileaf collimator).

With respect to claim 41, Hughes disclosed the imaging system of claim 36, wherein the aperture assembly comprises multiple independently positionable sections (multileaf collimator) with different boundary shapes (the aperture assembly has different boundary shapes depending on the positions of the positionable sections).

With respect to claim 42, Hughes disclosed the imaging system of claim 41, wherein the multiple sections have linear boundaries.

With regard to claim 43, Hughes disclosed the imaging system of claim 39, wherein the plurality of sides comprise rotationally (about rotational axis **8**) and translationally movable sides.

With respect to claim 44, Hughes disclosed a method for radiation imaging, comprising: moving (**6**) a radiation source in a plurality of radiation source positions; adjusting an aperture (**4**) by synchronizing the aperture geometry adjustment with the movement of the radiation source and coordinating at least one of the position and the shape of the aperture with the respective position of the radiation source (column 3, lines 54-66) relative to the radiation detector position such that a radiation beam emanating from the radiation source is collimated to limit the incident radiation to a predetermined exposure area (an imaging area) at a radiation detector; and detecting the radiation beam on the radiation detector (**90**).

With regard to claim 45, Hughes disclosed a tomosynthesis system comprising: a movable radiation source (**15**); a radiation detector (**90**); a collimator (**4**) comprising an adjustable geometry assembly (column 4, lines 3-13) configured such that an adjustment of the geometry of an aperture is synchronized in time with respect to a movement of the radiation source and coordinated in space with respect to the radiation source position (column 3, lines 54-66) relative to the radiation detector position so as to limit the incident radiation of the tomosynthesis system to a predetermined exposure area (an imaging area) at the detector. Note: although this claim recites "tomosynthesis system", it fails to define a system that is structurally distinguishable from the prior art. Structurally, this tomosynthesis system comprises a movable radiation, a radiation detector, and a collimator synchronized with the motion of the radiation source, and it is not distinguishable from the prior art. MPEP § 2114.

With regard to claim 46, Hughes disclosed the tomosynthesis system of claim 45, wherein the aperture assembly is configured for adjusting at least one of the position of the aperture and the shape of the aperture.

With regard to claim 47, Hughes disclosed the tomosynthesis of claim 45, further comprising a collimator assembly comprising a collimator positioning apparatus (**6**, **18**) for positioning the collimator.

Response to Arguments

3. Applicant's arguments filed 02 November 2005 have been fully considered but they are not persuasive.

The applicants argue that Hughes failed to teach coordinating the adjustment the geometry of the aperture relative to the radiation detector position to limit the incident radiation to a predetermined exposure area at the detector. The examiner respectfully disagrees. Hughes disclosed a radiation imaging system that comprises a radiation detector (**90**) positioned behind a patient to verify the treatment (column 4, lines 30- 44). Hughes further taught that the radiation beam is focused on a zone (**12**) of the patient (column 3, lines 44 - 46). It is necessary to configure the radiation detector such that its imaging area intercepts/captures the radiations transmitted through the patient to verify the treatment. As the geometry of the aperture is adjusted in synchronization with the movement of the radiation source, the radiation is always limited by the aperture to incident on an imaging area on the detector. The radiation treatment could not be verified if the radiation is not limited to incident on the imaging area on the detector.

The rejection is being maintained.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

(1) Tretiakov *et al.* (U. S. Patent No. 6,940,948 B1) disclosed a digital x-ray scanning apparatus.

(2) Halsmer *et al.* (U. S. Patent No. 6,898,269 B2) disclosed an x-ray imaging system.

(3) Moore (U. S. Patent No. 6,683,935 B2) disclosed a CT with virtual tilt and angulation.

(4) Mohr *et al.* (U. S. Patent No. 6,618,465 B2) disclosed a shielded digital radiographic inspection system.

(5) Ogawa (U. S. Patent No. 6,339,636 B1) disclosed a radiation imaging recording apparatus.

(6) Linders *et al.* (U. S. Patent No. 6,215,848 B1) disclosed a method for forming an assembled image from successive x-ray images.

(7) Murthy *et al.* (U. S. Patent No. 6,055,295) disclosed an apparatus for automatic collimation in x-ray peripheral imaging.

(8) Coe (U. S. Patent No. 5,481,586) disclosed automatic position control system.

(9) Chiu *et al.* (U. S. Patent No. 5,369,678) disclosed a method for tracking a catheter probe using fluoroscopic imaging.

(10) Born *et al.* (U. S. Patent No. 5,349,625) disclosed an x-ray diagnostic installation for peripheral angiography examinations.

(11) Watanabe (U. S. Patent No. 5,050,199) disclosed a radiographic apparatus.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (571) 272-2491. The examiner can normally be reached on Monday - Friday from 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached at (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Allen C. Ho

Allen C. Ho
Primary Examiner
Art Unit 2882

09 November 2005